INFORMATION ON NEW CONTRIBUTIONS OF THE DISSERTATION

Dissertation title: DETERMINING RAINFALL INTENSITY FOR DESIGNING RAINWATER DRAINAGE SYSTEMS IN HANOI CITY

Major: **Infrastructure Engineering** – Code: **9580210**

PhD candidate: **Ha Xuan Anh**

Scientific supervisors: **Assoc. Prof. Dr. Tran Thi Viet Nga**

Dr. Nguyen Van Nam

Education institution: Hanoi Architectural University

SUMMARY OF NEW CONTRIBUTIONS OF THE DISSERTATION

1. Select the appropriate probability distribution function (PDF) for short-duration rainfall data observed in Hanoi.

- Build empirical frequency curves using short-duration rainfall data series.
- Indicates that the Gumbel distribution provides an effective fit for analyzing short-duration rainfall frequency in Hanoi city area.

2. Develop Intensity-Duration-Frequency (IDF) curves for Hanoi area with updated rainfall data up to 2023.

- Identify and compute the return-periods of 2, 5, 10, 25, 50 and 100 years corresponding to rainfall probabilities of 50%, 20%, 10%, 4%, 2% and 1%, respectively.
- Develop IDF curve charts for offering Hanoi's rainfall characteristics.

3. Identify the optimal set of climate parameters of the proposed equation for calculating design rainfall intensity for Hanoi city area.

- The dissertation applied the Generalized Reduced Gradient (GRG) Nonlinear method to determine the new set of climate parameters.
- The new equation exhibited offers a more precise representation of IDF data.
- Evaluate the applicability of the proposed design rainfall intensity equation for calculating and designing a real rainwater drainage system in Hanoi.

PhD candidate

Ha Xuan Anh